

## CLAIMS

I claim:

- 1        1. A digital elevation knob device, comprising:
  - 2            a generally cylindrical, rotating ribbed knob;
  - 3            a non-rotating generally cylindrical scope mount having a
  - 4 longitudinal axis coincident with that of said ribbed knob, and
  - 5 a longitudinally arranged pair of flanges, said scope mount
  - 6 being adapted and configured for receiving said ribbed knob and
  - 7 mounting said knob to a rifle scope; and
  - 8            a computer housing, said housing comprising a programmable
  - 9 computer, a display screen disposed on an upper front portion of
  - 10 said housing for indicating readout data, a plurality of push
  - 11 buttons disposed on a lower front portion of said housing for
  - 12 selection of functions and entering of numerical parameters, an
  - 13 interface plug for receiving an exterior data entry device, and
  - 14 a power source;
- 15        whereby a rifleperson can enter data into the computer to
- 16 obtain the optimum elevation setting for firing the rifle at a
- 17 target.

1           2. The digital elevation knob device according to claim 1,  
2 further comprising a target viewing element disposed inside of  
3 the tube of the rifle scope, a target adjuster screw secured to  
4 the bottom of said knob and positioned above the target viewing  
5 element, a positioning spring disposed beneath and supporting  
6 the target viewing element and a displacement sensing element  
7 for determining the displacement of the target viewing element.

1           3. The digital elevation knob device according to claim 2,  
2 wherein said displacement sensing element is selected from the  
3 group consisting of a magnetic tape coupled to a pair of  
4 magnetic flux transducers, optical sensors, optical encoders,  
5 precision potentiometers and absolute multi-turn sensors.

1           4. The digital elevation knob device according to claim 2,  
2 further comprising a weapon lay sensor located proximate to said  
3 displacement sensing element, wherein said weapon lay sensor  
4 determines if the rifle is canted or inclined.

1        5. The digital elevation knob device according to claim 1,  
2 wherein said display screen is selected from the group  
3 consisting of liquid crystal display screens, laser emitting  
4 diode screens and plasma screens.

1        6. The digital elevation knob device according to claim 1,  
2 wherein said power source is selected from the group consisting  
3 of internal batteries and external D.C. power sources.

1        7. The digital elevation knob device according to claim 1,  
2 wherein said programmable computer further comprises:

3        a communications port for receiving input data in said  
4 computer;

5        at least one signal conditioning unit for receiving and  
6 formatting signals delivered to the programmable computer from  
7 the displacement sensing element and the weapon lay sensor;

8        an input and output control unit that controls the timing  
9 and flow of input data and output data in the programmable  
10 computer;

11       a data storage unit for storing ballistic tables, operating  
12 system data, and application programs for trajectory and setup  
13 routines;

14       a central processing unit for receiving processing input  
15 data and conditioned signals from the control unit and  
16 processing the input data with stored data retrieved from the  
17 data storage unit;

18       a power control unit for controlling the settings of the  
19 knob device, wherein the power control unit can change the  
20 status of the knob device to a sleep mode, a charging mode, a  
21 wake-up mode and a power mode, and regulates the power supplied  
22 by said power source; and

23       a readout unit that supplies readout information to said  
24 display screen;

25       whereby the input control transmits signals and data to the  
26 power control unit, the communications port, the central  
27 processing unit and the readout unit.

1           8. The digital elevation knob device according to claim 1,  
2 wherein said computer housing is attached to said scope mount  
3 between the pair of flanges.

1           9. A method of calibrating the telescopic scope of a rifle  
2 using a digital elevation knob, comprising the steps of:

3           entering input parameters in a programmable computer  
4 mounted to the telescopic scope using a communication port and a  
5 keypad;

6           adjusting a target viewing element disposed inside of the  
7 telescopic scope and transferring a signal containing the degree  
8 of displacement of the target viewing element to the  
9 programmable computer;

10          processing the signal and the input parameters entered into  
11 the programmable computer; and

12          displaying processed information to the user of the  
13 telescopic rifle scope;

14          whereby the user of the telescopic rifle scope is supplied  
15 with information to properly adjust the telescopic rifle scope  
16 to accurately sight a specific target.

1           10. The method according to claim 9 wherein said entering  
2 input parameters step further comprises the steps of:

3           entering ammunition data comprising type of ammunition,  
4 weight of bullet, caliber of bullet, muzzle velocity of bullet  
5 and drag coefficient of bullet when fired;

6           entering scope model coefficients;

7           entering periodic updated software data;

8           entering ambient conditions data comprising temperature,  
9 wind velocity in compass direction, relative humidity, altitude  
10 and barometric pressure;

11          entering firearm coefficients comprising barrel length and  
12 muzzle break;

13          resetting the home position after the programmable computer  
14 is charged;

15          entering correctional coefficients if the user is off the  
16 mark during target practice;

17          entering measurement units; and

18        entering target data comprising elevation of target,  
19        direction of target and speed of target.

1        11. The method according to claim 9 wherein said target viewing  
2        element adjustment step further comprises:

3                rotating an adjuster knob that in turn rotates an adjuster  
4        screw positioned above the target viewing element;

5                determining the displacement of the target viewing element  
6        with a displacement sensing element; and

7                transferring the displacement signal from the displacement  
8        sensing element to the programmable computer.

1                12. The method according to claim 9 further comprising the  
2        step of measuring the cant of the firearm with a weapon lay  
3        sensor and transmitting a cant signal and a rifle inclination  
4        signal to the programmable computer.

1                13. The method according to claim 9, wherein said  
2        processing step further comprises:

3 formatting the signals in a signal conditioning unit so  
4 that the signals may be read by a central processing unit;

5 transferring the formatted signals to the central  
6 processing unit through an input and output control unit;

7 transferring the input parameters to the central processing  
8 unit through the input and output control unit; and

9 processing the signals and input parameters with  
10 information retrieved from a data storage unit, said information  
11 comprising ballistic tables, operating system data, and  
12 application programs for trajectory and setup routines.

1 14. The method according to claim 9 further comprising the  
2 step of receiving input data from an external data source  
3 through an interface socket disposed on the programmable  
4 computer.

1 15. The method according to claim 14 further comprising  
2 the step of transmitting output data to the external data source  
3 through the interface socket.



1        16. A digital riflescope device comprising:

2        a telescopic sight for a gun having a scope tube and a  
3 target viewing element disposed inside of the scope tube;

4        a horizontal adjustment knob disposed along the side of  
5 said telescopic sight for making wind and sight adjustments;

6        a generally cylindrical, rotating ribbed knob;

7        a non-rotating generally cylindrical scope mount having a  
8 longitudinal axis coincident with that of said ribbed knob, and  
9 a longitudinally arranged pair of flanges, said scope mount  
10 being adapted and configured for receiving said ribbed knob and  
11 mounting said knob to a rifle scope; and

12       a computer housing comprising a programmable computer, a  
13 display screen disposed on an upper front portion of said  
14 housing for indicating readout data, a plurality of push buttons  
15 disposed on a lower front portion of said housing for selection  
16 of functions and entering of numerical parameters, an interface  
17 plug for receiving an exterior data entry device, and a power  
18 source;

19           whereby a rifleperson can enter data into the computer to  
20 obtain the optimum elevation setting for firing the gun at a  
21 target.